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REMARKS

The Examiner recites certain terms of Claims 1, 3 and 5 and indicates that clarification or correction is required. However, there is no explanation as to why these terms of Claims 1, 3 and 5 are deficient. Because Applicants believe that the terms used in Claims 1, 3 and 5 are adequate, and the Examiner has not provided any specific grounds for rejection, Applicants are not amending Claims 1, 3 and 5 at this time.

Claims 1-3, 5, 6, and 9 have been rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto et al. (U.S. Patent 5,879,844). This rejection is traversed for the following reasons.

Claim 1 recites "forming an IC layer data file including data describing a repeating element, data describing a skeleton into which copies of the repeating element are to be placed, and instructions as to where repeating elements are to be placed". (Emphasis added.)

The Examiner indicates that Yamamoto et al. teaches "forming an IC layer data file including data describing a repeating element (col. 7, lines 61-67 where the element of area is repeated)".

Contrary to the Examiner's assertion, this portion of Yamamoto et al. fails to teach "a repeating element" as recited by Claim 1. In contrast, the cited portion of Yamamoto et al. recites:

In FIG. 13, a mask pattern to be corrected is shown divided into areas A1 to A4. More particularly, this figure illustrates how many times the correction calculation is performed repeatedly on each area. ... S1 to S4 indicate areas in which correction calculations are performed one time to four times. As shown in FIG. 13, since the correction calculations are performed on the entire OPE calculation area for each to-be-corrected area, uncorrected patterns in the buffer areas are subjected to correction calculation and pattern data processing two (S2) to four times (S4), resulting in a waste of a large amount of calculation time. (Emphasis added.) (Yamamoto et al., Col. 7, line 61 to Col. 8, line 7.)

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Because Yamamoto et al. teaches that a correction calculation must be performed at least one time (and up to four times) for each of areas A1 to A4, Yamamoto et al. fails to teach "a repeating element" as recited by Claim 1. Note that if Yamamoto et al. taught a repeating element, then correction calculations would not have to be performed one or more times for each area.

For these reasons, Claim 1 is not anticipated by Yamamoto et al. Claim 2, which depends from Claim 1, is not anticipated by Yamamoto et al. for at least the same reasons as Claim 1.

Claim 3 recites "identifying actual repeating elements in the layer". Again, the Examiner indicates that col. 7, lines 61-67 of Yamamoto et al. teaches the step of identifying actual repeating elements in the layer. However, as described above in connection with Claim 1, Yamamoto et al. fails to teach "repeating elements" as recited in Claim 3.

Claim 3 further recites "dividing the layer to form database repeating elements by making dividing lines within the actual repeating elements to exclude edge portions of the actual repeating elements". The Examiner indicates that this element of Claim 3 is taught by Yamamoto et al. at col. 3, lines 51-59. However, this section of Yamamoto et al. does not teach "repeating elements", but rather teaches three different segments S1, S2 and S3 (Fig. 4) having three different distances A, B and C, respectively, from an adjacent pattern. Thus, this section of Yamamoto et al. teaches away from "repeating elements".

Claim 3 further recites "an instruction for inserting the at least one database repeating element into locations of the database repeating elements". The Examiner indicates that this element of Claim 3 is taught by Yamamoto et al. at col. 2, lines 19-31. However, this section of Yamamoto et al. describes "a conventional simulation-based approach" wherein "a rectangle of a width of Δt is added/removed along the contour of a mask

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pattern" such that "the light intensity at a point of interest on the contour reaches a desired value". However, adding/removing a width along the contour of a mask pattern is not the same as "an instruction for inserting the at least one database repeating element into locations of the database repeating elements" as recited by Claim 3.

For these reasons, Claim 3 is not anticipated by Yamamoto et al.

Claim 5 recites "at least one database repeating element".

The Examiner indicates that col. 7, lines 61-67 of Yamamoto et al. teaches "at least one database repeating element" as recited by Claim 5. However, as described above in connection with Claim 1, this section of Yamamoto et al. fails to teach a "repeating element".

Claim 5 further recites "an instruction giving locations at which the at least one database repeating element is to be placed".

The Examiner indicates that Yamamoto et al. teaches this element of Claim 5 at col. 6, lines 23-29. However, this section of Yamamoto et al. states:

[C]orrection is carried out while shifting an OPE window of fixed size. In the case of Fig. 9, therefore, correction will be repeated four times for the pattern a and two times for the sides b-1 and b-2 of the pictorial character b." (Emphasis added.)

Thus, while an OPE window has a fixed size, Yamamoto et al. does not teach that the contents of different OPE windows are repeating elements. In fact, Yamamoto et al. explicitly teaches that the correction operation must "be repeated four times for the pattern a", wherein the pattern a includes four proximity effect correction windows, the centers of which are identified by the symbol O. (Yamamoto et al., Col. 5, lines 64-65; Fig. 9.) Because Yamamoto et al. explicitly teaches that a separate correction operation must be performed for each of the windows, Yamamoto et al. teaches away from "an instruction giving

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locations at which the at least one database repeating element is to be placed".

For these reasons, Claim 5 is not anticipated by Yamamoto et al. Claims 6 and 9, which depend from Claim 5, are not anticipated by Yamamoto et al. for at least the same reasons as Claim 5.

Claims 10 and 11 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. in view of Tomita (Pub. No. 2002/0026260).

Claim 10 recites "at the design house, dividing the mask layout to identify a plurality of mask elements that are repeating and a skeleton of remaining elements, for the repeating mask elements creating a single database describing a repeating element and a set of instructions as to where to locate the repeating element".

As described above, Yamamoto et al. fails to teach "identifying a plurality of mask elements that are repeating" and "creating a single database describing a repeating element and a set of instructions as to where to locate the repeating element". Tomita fails to remedy these deficiencies of Yamamoto et al. (and the Examiner does not claim that Tomita remedies these deficiencies).

For these reasons, Claim 10 is allowable over Yamamoto et al. in view of Tomita. Claim 11, which depends from Claim 10, is allowable over Yamamoto et al. in view of Tomita for at least the same reasons as Claim 10.

Claims 4, 7 and 8 have been objected to as being dependent upon a rejected base claim. The Examiner has indicated that these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, because the Applicants believe that base Claims 3 and 5 are allowable for reasons stated above,

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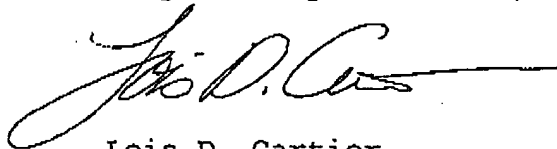
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Applicants are not amending dependent Claims 4, 7 and 8 at this time.

CONCLUSION

Claims 1-11 are pending in the present Application. Claims 4, 7 and 8 are allowable. Reconsideration and allowance of Claims 1-3, 5-6 and 9-11 is respectfully requested. If the Examiner has any questions or comments, he is invited to call the undersigned at 720-652-3733.

Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service as FIRST CLASS MAIL in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA, 22313-1450 on October 16, 2003.

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